18 9500 (1043, 1143)

24.7500 (1160, 1144, 1482)

29891

S/070/61/006/004/006/007
E073/E335

AUTHORS: Belyayev, L.M., Shakhovskoy, G.P., Smirnov, S.P. and Kuz'mina, I.P.

TITLE: Growing of Cadmium Sulphide Crystals at Elevated Pressures

PERIODICAL: Kristallografiya, 1961, Vol. 6, No. 4, pp. 641 - 643

TEXT: Mentioning work of other authors, it is stated that interesting results were achieved by Medcalf and Fahring (Ref. 5 - J. Electrochem. Soc., 105, 719-724, 1958). The authors of this paper developed more simple apparatus for growing cadmium-sulphide crystals (Fig.1). It consists of a thick-walled cylinder 4 with a cover 2, which is fastened by eight bolts 3. The tightening of the cover is accomplished with pressure ring 9 and two gaskets 8. The cylinder carries four electric input leads 10, two of which connect the thermocouple 5 and the other two connect the heating element 7. The cover has a T-shaped pipe 1 which carries a manometer and a valve for filling the cylinder with an

Card 1/4

BELYAYEV, L.M.; VITOVSKIY, B.V.; DOBRZHANSKIY, G.F.; KARPENKO, A.G.

Modified crystallization tank. Kristallografiia 6 no.2:286-287 Mr-Ap '61. (MIRA 14:9)

1. Institut kristallografii AN SSSR.
(Crystallization)

S/070/61/006/001/010/011
E073/E335

Crystalliser for Growing .....

including substances of low solubility. Figure 2 gives a photograph of the equipment. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography of the AS USSR)

SUBMITTED: May 26, 1960

Card 6/8

S/070/61/006/001/010/011
E073/E335

Crystalliser for Growing .....

crystalliser, as a result of which a constant saturation is maintained in the crystalliser. The specific degree of saturation will become established at a given temperature which hardly changes at all with the growth of the crystal. Under otherwise equal conditions the degree of saturation and consequently the speed of growth of the crystal is controlled by changing the temperature of the solution. Furthermore, equipment can be designed which permits changing (increasing in the case of a positive temperature coefficient of the solubility) the evaporation surface of the first and the second vessels in accordance with a given programme. The temperature field of the crystalliser has a small gradient directed from the bottom upwards. The thermal effects of the reactions in the system are localised and can be easily taken into consideration. Mechanical mixing of the solution in the crystalliser is by means of a magnetically actuated mixer. The reliability of the described crystalliser was verified under laboratory conditions for a number of substances,

Crystalliser for Growing .....

the first and the second vessels, which is considerably smaller than the surface in the third vessel. During operation of the crystalliser condensation of the solvent will occur at the inner surface of the lid and the top part of the first vessel. The lid is made semispherical or conical so as to ensure that the condensate returns only into the first vessel where dissolution of the recrystallised substance takes place as a result of continuous inflow of solvent. Since the vessels intercommunicate, a constant hydrostatic level difference is maintained, which is governed solely by the difference in the density of the solution in the first and third vessels and in the system as a whole constant concentration flows will establishe themselves, as shown by arrows in Fig. 1. The solvent evaporated from the third vessel is replaced by a quantity of solution of equal mass from the first vessel. In this way, there will be a continuous transfer of the crystallising substance from the solution zone into the

Crystalliser for Growing .....

the second is a few cm below the level of the mother liquor. The first vessel is intended for dissolving the crystallised substance and for receiving the condensate. It also serves as a settling vessel and a thermostat. The second vessel serves as a carrier of the solution and has a seal preventing the falling of germinations from the zone of dissolution into the crystalliser. The third (internal) vessel is the crystalliser. The communication between the lid of the crystalliser and the first cylinder is by means of a ground surface. In a crystalliser of this design, a "continuous" complicated cycle of mass transfer from one state into another takes place. The crystalliser is filled with a solution which is saturated at a given temperature. The degree of filling can be seen from Fig. 1. At the bottom, between the walls of the first and the second vessels, the excess material is fed in which is considerably greater than the weight of the crystal to be produced. The geometric dimensions of the vessels are so chosen as to obtain an evaporation surface in

Crystalliser for Growing .....

mother liquor. The crystalliser does not require any pumping systems or any other forcing devices for maintaining a constant level and the desired degree of saturation of the solution. Transfer of the substance to be crystallised from the solution zone into the space where crystallisation takes place and maintenance there of the required saturation are by means of natural circulation, including evaporation of the solvent, its condensation, return of the condensate into the zone of solution of the substance and movement of the solution into the zone of crystal growth. The crystalliser, Fig. 1, is mounted on an electric heater and contains all the apparatus for maintaining and controlling the temperature. It consists of three coaxial vessels, fitted one inside the other, in such a way that the first (external) and the second (middle) intercommunicate at the top whilst the second and third (inner vessels) intercommunicate from the bottom. The edges of the first and third vessels should be above the level of the mother liquor, whilst the edge of

S/070/61/006/001/010/011
E073/E335

AUTHORS: Karpenko, A.G., Belyayev, L.M., Vitovskiy, B.V. and Dobrzhanskiy, G.F.

TITLE: Crystalliser for Growing Crystals by the Evaporation Method

PERIODICAL: Kristallografiya, 1961, Vol. 6, No. 1, pp. 146 - 147

TEXT: In spite of numerous advantages of this method it has been relatively little used. Its main drawbacks are a decrease in the volume of the mother liquor during crystallisation, loss of solvent during evaporation (important in the case of poisonous or expensive solvents) and impossibility of obtaining a continuous process of crystallisation without having to fill the crystalliser with saturated solutions. The latter is particularly important in crystallising substances which are difficult to dissolve. The authors propose a design of crystalliser which enables continuous crystallisation by evaporation in a closed crystalliser without loss of the solvent, maintaining a constant level of the

Card 1/8

CsI(Tl) Scintillators .....

S/070/61/006/001/007/011
E032/E514

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography AS USSR)

SUBMITTED: August 17, 1960

Table 3

Diameter of crystal, mm	Relative light output	Resolution of the Am^{241} α-line, %
30	100	5
30	109-111	3.5-4
40	98-109	4-4.5
50	88-91	5.5-6.3
55	88-94	5.2-6.3

Card 3/4
3

important effect on the scintillation properties of the crystal, particular attention was paid to the purity of the surface and to the degree to which it was polished. The present authors have used emergy paper M-28 and M-10 attached to rotating metal discs and cerium oxide on a rotating ebonite disc covered by natural silk slightly moistened with ethyl glycol (A. E. Souch and D.R.Sweetman, Ref.5). The characteristics of the CsI(Tl) crystals were measured using a single-channel kicksorter and specially selected photomultipliers of types ФЭУ-24 (FEU-24) and ФЭУ-29 (FEU-29). It was found that different responses are obtained at different points on the surface of the crystal. Fig.1 shows the Am^{241} α-particle line obtained at different points on the surface of a 4 cm diameter scintillator. The numbers refer to different points on the crystal surface, as indicated in the circle on the left-hand side (Fig.1a). Fig.1b shows the response for a ground (1) and polished (2) surface. Scintillators with polished surfaces have better characteristics. Table 3 gives the scintillation characteristics of these crystals. Acknowledgments are made to G. F. Dobrzhanskiy who supplied the CsI(Tl) crystals, 50 and 55 mm in diameter. There are 3 tables, 1 figure and 6 references: 2 Soviet and 4 non-Soviet.

S/070/61/006/001/007/011
E032/E514

AUTHORS: Belyayev, L.M., Gil'varg, A.B. and Panova, V.P.

TITLE: CsI(Tl) Scintillators for the Recording of α-Particles

PERIODICAL: Kristallografiya, 1961, Vol.6, No.1, pp.133-135

TEXT: J. C. Robertson and A. Ward (Ref.1) have reported a CsI(Tl) α-particle detector having a low γ-ray sensitivity. Other similar detectors have been reported by M. L. Halbert (Ref.2) and H. Knoepfel et al. (Ref.3). The present authors have investigated the properties of CsI(Tl) crystals having diameters between 30 and 55 mm. Commercially available CsI(Tl) crystals having a resolution of less than 14 to 15% at the Cs^{137} photopeak were selected. Thin CsI(Tl) scintillators were prepared as follows. One end of the crystal was polished and attached to a plane-parallel glass plate 2 mm thick with the aid of Canada balsam. The glass plate had a diameter slightly greater than the diameter of the crystal. This was done because, owing to the plasticity of the CsI crystal, it is important to prepare from it a plane-parallel plate having a thickness of less than 2 to 1.5 mm. Next, using a special saw, a piece of the crystal was removed so that a plate 1.5 to 2 mm thick remained on the glass support. Since the state of the surface has an

Mixed organic crystals...

thalene) vanishes. These results are interpreted by the authors in terms of interaction between the two molecules in the crystals. Such interaction is a function of the similarity in structure and depends on the formation of solid solutions. It was shown by A. I. Kitaygorodskiy (Ref. 6: Kristallografiya, 2, no. 4, 456, 1957) that such a formation is conditioned by the similarity of both shape and size of the components. Accordingly, the projection of naphthalene was compared with that of the added compounds. The conclusions drawn from these comparisons are in agreement with the experimental results. Finally, luminescence is shown to be used as a method of estimating the quantity of the luminescent compound having entered the composition of the crystal. The use of luminescence in analysis has been proposed by F. D. Klement (Ref. 8: Trudy Inst. fiziki i astronomii Akad. nauk Estonskoy SSR, no. 7, 1958). There are 3 figures and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: I. B. Birks, Proc. Phys. Soc., A., 63, 9, no. 36, 1044, 1950; E. I. Bowen, Chemical aspects of light, Oxford, 1949.

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Mixed organic crystals...

v.2, 1959, p. 102) and that of Stockbarger. The intensity of scintillation was measured by the amplitude method (using ФЭУ-29 (FEU-29) excited by the γ-radiation of Cs^{137}) with a scintillation spectrometer. Optical contact between specimens and the photocathode was provided by vaseline. The measurements were carried out with a half-elliptical reflection coated with aluminum. Stilbene monocrystals were used as standards and their scintillation intensity was taken as 100%. The spectra of luminescence were taken on a SF-4 spectrophotometer using the Hg line at 313 mμ. These measurements showed the following results: (1) DPB, DPH, anthranilic acid, and methyl anthranilate greatly enhanced the intensity of naphthalene scintillation. (2) This intensity is a function of concentration, especially at low levels. (3) The region of spectra is displaced to the right, in comparison with that of pure naphthalene. Thus, the spectra of crystals, containing DPB, anthranilic acid, and DPH show principal peaks at 392, 406, and 430 mμ, respectively, compared with 345 mμ from pure naphthalene. (4) The spectra show two peaks; at high concentrations, however, one of them (attributed to naph-

30537

S/564/61/003/000/008/029
D258/D304

54500 2209

AUTHOR: Belikova, G. S., and Belyayev, L. M.

TITLE: Mixed organic crystals for scintillation counters

SOURCE: Akademiya nauk SSSR. Institut kristallografii. Rost kristallov, v. 3, 1961, 316-321

TEXT: The authors studied the mechanism by which mixed organic crystals of improved luminescence are formed. Mixtures of naphthalene with up to 1% b.w. of a luminescent compound were used. The latter compounds could be divided into the following groups: (1) anthracene-phenantrene-chrysene; (2a) diphenyl-p-terphenyl-quaterphenyl; (2b) dibenzyl--stilbene-tolane; (2c) 1,4-diphenylbuta-1,3-diene (DPB)-1,6-diphenylhexa-1,3,5-triene (DPH)-1,1,4,4-tetraphenylbuta-1,3-diene (TPB); (3) anthranilic acid, methyl anthranilate-N-methyl anthranilic acid-N-phenyl anthranilic acid. The mixed crystals were grown from a melt of the purified components, using two methods, namely, that of L. M. Belyayev, G. S. Belikova, and G. F. Dobrzhanskiy (Ref. 3: Akad. nauk SSSR. Rost kristallov,

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S/054/62/000/006/042/136
A061/A101

Organic mixed crystals for scintillation counters

excitation energy transfer from the basic substance to the impurity are not only the good overlapping of the impurity absorption spectra by the luminescence spectrum of the base, but also the ability of these substances to form mixed crystals, which may be judged by the geometrical similarity of impurity and base molecules.

V. Arkhangel'skaya

[Abstracter's note: Complete translation]

Card 2/2

S/058/62/000/006/042/136
A061/A101

9.4150

AUTHORS: Belikova, G. S., Belyayev, L. M.

TITLE: Organic mixed crystals for scintillation counters

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 58, abstract 6V400 (In collection: "Rost kristallov. T. 3". Moscow, AN SSSR, 1961, 316 - 321. Discuss., 501 - 502)

TEXT: Luminescence spectra and scintillation capacity (with respect to stilbene) have been studied on naphthalene crystals with luminescent impurities belonging to the following structural groups: condensed and noncondensed polynuclear aromatic compounds, and also anthranilic acid and its derivatives. The growth conditions for crystals with impurities, and the production of scintillators from them, are described at length. It is shown that the scintillation intensity of naphthalene with impurities greatly depends on the concentration of the latter; with 1,6-diphenyl hexatriene, 1,4-diphenyl butadiene, and anthranilic acid in concentrations of 0.4 - 1.0%, it is comparable with the scintillation intensity of stilbene. It is further shown that the conditions of an effective

Card 1/2

S/058/62/000/006/058/136
A061/A101

AUTHORS: Belyayev, L. M., Perl'shteyn, V. A.

TITLE: The use of radioactive tracers for the study of crystal growth

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 9, abstract 6E77 (In collection: "Rost kristallov. T. 3". Moscow, AN SSSR, 1961, 322 - 325. Discuss., 501 - 502)

TEXT: Examples are given concerning the application of the radiographic method to the study of the rules governing the entering of impurities into the process of crystal growth. The authors have studied the character of activator distribution in alkali halide crystals grown in different ways, as well as the character of impurity distribution in alum when growing crystals from solutions supersaturated to different degrees. The data obtained by the radiographic method illustrate the rules observed in crystal growth from solutions, and the impurity distribution over different growth pyramids. The use of the radiographic method in the study of crystal growth processes is shown to be sufficiently simple and to expand the scope of investigations considerably.
[Abstracter's note: Complete translation] A. M.

Card 1/1

Growing crystals of lead ...

S/081/62/000/013/003/054
B158/B144

are lowered into a ceramic tube with a nickel-chrome heating jacket. The best results are obtained when the crucible is lowered at a speed of 0.5 mm/hr and is rotated at 2 r.p.m. Methods for preparing and purifying the starting materials are described. Curves of optical density of $PbCl_2$ and PbF_2 are obtained which agree with published data. [Abstracter's note: Complete translation.]

Card 2/2

S/081/62/000/013/003/054
B158/B144

AUTHORS: Belyayev, L. M., Koshuashvili, M. V., Chernyshev, K. S., Gorshteyn, G. I., Nechayeva, V. S.

TITLE: Growing crystals of lead fluoride and chloride

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 13, 1962, 44, abstract 13B252 (Sb. "Rost kristallov. v. 3". M., AN SSSR, 1961, 338 - 341)

TEXT: Crystals of PbF_2 with a diameter of several cm are obtained in an N_2 atmosphere using Stockbarger's method. Special measures are taken for complete removal of moisture from the apparatus and reagents. In the crystallization process, Ar was passed through the furnace at a pressure of 0.1 atm. Best results were obtained when the crucible was lowered at a speed of 6 mm/hr. From various crucibles tested the best were found to be of graphite. Single crystals of $PbCl_2$ were obtained by Obreimov and Shubnikov's method. The crystals are grown in sealed glass ampoules, which

Card 1/2

S/070/60/005/005/009/017
E132/E360

The Luminescence Properties of Lithium Fluoride Activated by Uranium

the long wavelength region. It is shown that the presence of an oxidising atmosphere which permits the formation of the U^{+6} ions is a necessary condition for the activation of a crystal by uranium during its growth. The dependence of the luminescence and absorption in the crystal on the concentration of the activator permits the use of luminescence analysis for studying the processes by which impurities are distributed during the growth of crystals. There are 4 figures and 7 references: 5 Soviet and 2 English.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography of the AS USSR)

SUBMITTED: March 11, 1960

Card 2/2

S/070/60/005/005/009/017
E132/E360

AUTHORS: Belyayev, L.M., Perekalina, Z.B., Varfolomeyeva, V.N., Panova, V.P. and Dobrzhanskiy, G.F.

TITLE: The Luminescent Properties of Lithium Fluoride Activated by Uranium

PERIODICAL: Kristallografiya, 1960, Vol. 5, No. 5, pp. 757 - 760

TEXT: Crystals of LiF - U were grown by the Kiropulos method in air. Uranium was introduced as uranyl nitrate or sulphate in concentrations of 0.01 to 0.5 wt.%. Crystals with 0.01% activator had a blue-green luminescence and with 0.02% and above a yellow-green luminescence. The spectra of the luminescence excited by a mercury lamp (ПРК-4 (PRK-4) with a УФС-1 (UFS-1) filter) were measured with a УМ-2 (UM-2) monochromator and an ФЭУ-32 (FEU-32) photomultiplier. Absorption spectra were measured on an СФ-4 (SF-4) spectrophotometer. The spectra are reproduced. From 0.01 to 0.03% of the activator an effect was discovered by which the bands of the luminescence spectrum were displaced. The absorption spectrum was also displaced towards

Card 1/2

STARTSEV, V.I., otv. red.; ALEKSANDROV, B.S., red.; BELYAYEV, L.M., red.; BRUDZ', V.G., red.; VOYTOVETSKIY, V.K., red.; GALANIN, M.D., red.; DISTANOV, B.G., red.; KLIMOV, A.P., red.; SEMENENKO, M.G., red.; SHAMOVSKIY, L.M., red.

[Scintillators and scintillation materials] Stsintilliatory i stsintilliatsionnye materialy. Moskva, Gos. komitet Soveta Ministrov SSSR po khimii, 1960. 319 p. (MIRA 15:4)

1. Koordinatsionnoye soveshchaniye po stsintilliatoram. 2nd, 1957. (Scintillation counters)

Vsesoyuznaya konferentsiya po fizike dielektrikov. 2d, 1958

Fizika dielektrikov; trudy vtoroy vsesoyuznoy konferentsii (Physics of Dielectrics; Transactions of the 2d All-Union Conference on the Physics of Dielectrics) Moscow, Izdvo AN SSSR, 1960. 532 p. Errata slip inserted. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Fizicheskiy institut imeni P.N. Lebedeva.

Ed. of Publishing House: Ya.L. Starokadomskaya; Tech. Ed.: I.N. Gorokhina. Editorial Board: (Resp. Ed.) G.I. Skanavi, Doctor of Physics and Mathematics (Deceased), and N.V. Filippova, Candidate of Physics and Mathematics.

PURPOSE: This collection of reports is intended for scientists investigating the physics of dielectrics.

COVERAGE: The Second All-Union Conference on the Physics of Dielectrics held in Moscow at the Fizicheskiy institut imeni P.N. Lebedeva (Physics Institute imeni P.N. Lebedev) in November 1958 was attended by representatives of the principal scientific centers of the USSR and of several other countries. This collection contains most of the reports presented at the conference and summaries of the discussions which followed. The reports in this collection deal with dielectric properties, losses, and polarization, and with specific inductive capacitance of various crystals, chemical compounds, and ceramics. Photoelectrets, ferroelectric crystals, and various radiation and irradiation effects on dielectrics are investigated. The volume contains a list of other papers presented at the conference dealing with polarization, losses, and breakdowns of dielectrics, which were published in the journal Izvestiya AN SSSR, Seriya fizicheskaya, No. 1 and 2, 1960. No personalities are mentioned. References accompany each report.

Organic Mix-Crystals for Scintillation Counters. Brief Communications

77126
SOV/70-4-6-27/31

3 Soviet, 1 U.K. The U.K. reference is: J. Birks, Proc. Phys. Soc., 63, 36, 9A, 1944, 1950.

ASSOCIATION: Crystallographical Institute of the Academy of Sciences of the USSR (Institut kristallografii AN SSSR)

SUBMITTED: June 15, 1959

Card 3/3

Organic Mix-Crystals for Scintillation Counters. Brief Communications

77126
SOV/70-4-6-27/31

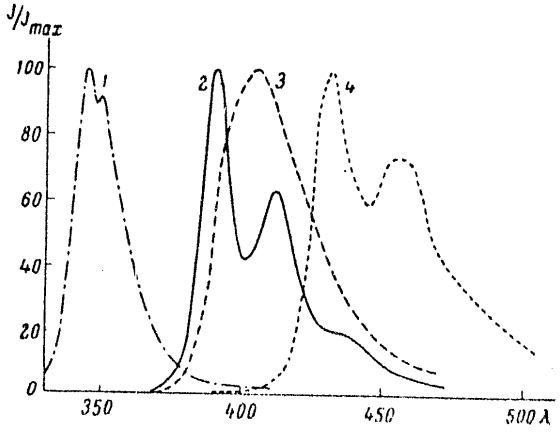

Fig. 1. Luminescence spectra of naphthalene crystals contaminated by various impurities: (1) pure crystal; (2) crystal contaminated by 1,4-diphenyl-butadiene (1%); (3) by anthranilic acid (1%); (4) by 1,6-diphenylhexatriene (0.5%).

Card 2/3

24.7100

77126
SOV/70-4-6-27/31

AUTHORS: Belyakova, G. S., Belyayev, L. M.

TITLE: Organic Mix-Crystals for Scintillation Counters. Brief Communications

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 6, pp 929-930 (USSR)

ABSTRACT: The article deals with the luminescence spectra of impure naphthalene crystals grown from a melt, contaminated with 0.001-1.0% anthranilic acid, methylanthranilate, 1,4-diphenylbutadiene-1,3, and 1,6-diphenylhexatriene-1,3,5. The impurity contents in the crystals are not studied, but the changing luminescence spectra and light output indicate the differing impurity contents in the crystals. A change in the spectra occurs only if the contaminating molecules are similar to those of the solvent with which they form solid solution, i.e., mix-crystals. There are 2 figures; and 4 references,

Card 1/3

compounds. The former showed higher absorption than LiF, especially of ultraviolet rays. The luminescence intensity of the LiF(M_G) crystals increases with the duration of aging of the molten phase prior to crystallization. The excitation of the LiF crystals, activated by uranyl compounds, was high by both electron beams and X-rays. The scintillation intensity of LiF(U) crystals was about 4% of that of NaI(Tl). There are 4 figures; and 4 references, 2 Soviet, 1 German, 1 U.S. The latter is: R. S. Moon, Phys. Rev., 13, 1210-1211, 1948.

ASSOCIATION: Crystallographical Institute of the Academy of Sciences of the USSR (Institut kristallografii AN SSSR)

SUBMITTED: June 15, 1959

24.7100

SOV/70-4-3-33/36

AUTHORS: Belyayev, L. M., Dobrzhanskiy, G. F., Chadayeva, V. V., Panova, V. P., Strekalina, Z. B., Varfalomeyeva, V. N.

TITLE: Growing Activated Lithium Fluoride Crystals

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 3, pp 794-795 (USSR)

ABSTRACT: The admission of impurities into the structure of LiF crystals to activate them for detection of thermal electrons, as for example for use in scintillators, is difficult, because of certain crystal-chemical properties of the crystals. The authors have grown LiF crystals by the Kyropoulos method in open Pt crucibles. In each case, a seed was attached to a cooler, protected by a Pt mantle. Mg, Al, Fe, Cu, Ga, In, and U compounds were added to the readily molten LiF. The luminiscence and absorption spectra were examined by monochromatizer UM-2 and spectrophotometer SF-4 respectively. The excitation by ultraviolet rays disclosed the highest luminescence of LiF(Mg) crystals and of those activated by uranyl

Card 1/3

briquet-holding shaft up or down. The heater of the protecting mantle melts the briquet gradually; the molten matter drops upon the crystal and provides its growth. The X-ray diffraction data proved that the grown crystals were monocrystals. There are 4 figures; and 3 Soviet references.

ASSOCIATION: Crystallographical Institute of the Academy of Sciences of the USSR (Institut kristallografii AN SSSR)

SUBMITTED: May 23, 1959

Some Changes in the Methods of Crystal Growth 76010
SOV/70-4-5-32/36

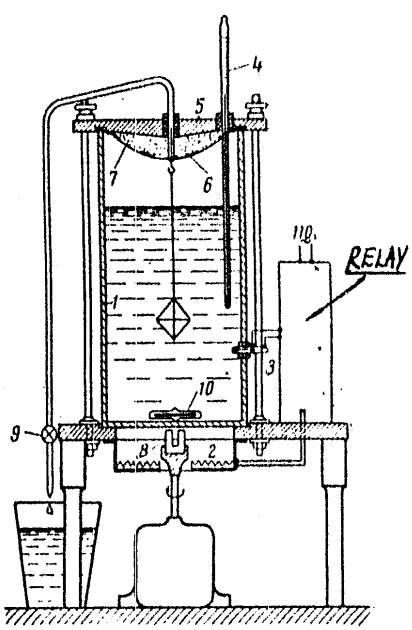

Fig 2

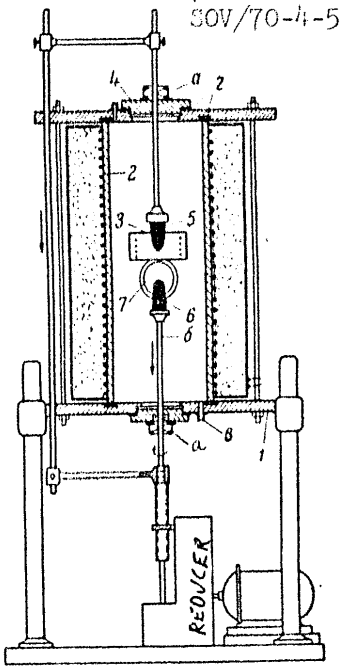

Fig 3

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absorption of the vapor. The crystallizer (Fig. 2) consists of glass container 1, placed upon electric heater 2, adjuster 3 providing a constant temperature, thermometer 4, cap 5, mantle 6 for holding vapor-absorbing cotton 7, capillary pipe with cock 9 to control draining of the condensed vapor, rotating magnet that rotates stirring rod 10. (3) Verneille's method of crystal growth of molten phase is changed as shown in Fig. 3. The quartz tube of the chamber crystallizer, placed on plate 1, is heated by winding. Crystal holder 8 extending through Wilson's packing a joins reducer that transmits rotation from motor to the crystal holder providing the latter's rotation at the rate of 2 rpm. Cap 4 and other parts join through vacuum packing. The chamber is pumped out to high vacuum or filled in with inert or any other gas through pipe B. The compressed powder briquet 5 of the compound to be crystallized is placed in protecting mantle 3 with heating winding in, and is coaxial with the crystal or its seed 6 stuck on the rotating crystal holder. The briquet-to-crystal distance is controlled by moving the

24.7100

76010
SOV/70-4-5-32/36

AUTHORS: Belyayev, L. M., Vitovskiy, B V., Dobrzhanskiy, G. F.

TITLE: Some Changes in the Methods of Crystal Growth

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 5, pp 791-794 (USSR)

ABSTRACT: The three changes successfully tested by the authors are: (1) The temperature at the face of a crystal growing of molten phase changes because of the changing $\frac{\text{solid}}{\text{liquid}}$ ratio, changing concentrations of admixtures, etc. Consequently, the composition of grown crystals may be uniform. To avoid the temperature change, a heater was placed in the molten phase and slowly pulled toward the growing crystal to maintain its temperature, controlled by a thermocouple, constant. (2) The crystals whose solubility hardly changes with temperature are usually grown by evaporation of the solution, for example, in the crystallizer developed by Robinson. The changed variety of the method provides constant temperature of a growing crystal and

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18,9500

S/058/62/000/009/021/069
A006/A101

AUTHORS: Belyayev, L. M., Belikova, G. S., Dobrzhanskiy, G. F.

TITLE: A crystallizer for the growing of organic crystals from a melt

PERIODICAL: Referativnyy zhurnal, Fizika, no. 9, 1962, 10, abstract 9E68 (In collection: "Rost kristallov. T. 3", Moscow, AN SSSR, 1959, 102 - 104)

TEXT: A description is given of a crystallizer for growing single crystals of low-melting organic substances (for instance, naphthalene and tolane) from melts by the modified Stöber method (F. Stöber, "Z. Kristallogr.", 1924, v. 61, 299). Glass crystallizer and thermostat are used. The crystal grows out of an oriented seed, covering the plane crystallizer bottom which contacts the refrigerator. The advantage of the described unit is the possibility of observing the crystal growth process.

[Abstracter's note: Complete translation]

Card 1/1

24(2) PHASE I BOOK EXPLOITATION SOV/2353

Akademiya nauk SSSR. Institut kristallografii

Rost kristallov, tom. 2 (Growth of Crystals, Vol. 2) Moscow, 1959. 238 p. Errata slip inserted. 2,000 copies printed.

Resp. Eds.: A. V. Shubnikov, Academician, and N. N. Sheftal', Doctor of Geological and Mineralogical Sciences; Ed. of Publishing House: K. S. Aleksandrov; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for scientists and researchers engaged in crystallography and in growing industrial monocrystals.

COVERAGE: This is the second of two volumes on crystal growth. The first volume contained reports delivered at the First Congress on Crystal Growth. The present volume also contains an extensive study of corundum synthesis by S. K. Popov [deceased]. These studies reflect the development of Soviet research in crystallography in the period following the first congress. The studies contain some essentially new results obtained by Soviet scientists. The editors express the hope that these studies will unite the efforts of Soviet scientists engaged in studying the process of crystal growth and in growing industrially valuable monocrystals. No personalities are mentioned. References are given at the end of each article.

AVAILABLE: Library of Congress

25

BELYAYEV, L. M.

On the Growing of Spectrometric Crystals According to the Method Developed by Kyropoulos. 48-1-4/20

means of a Cs^{137}-preparation with the photomultiplier ФЭУ-24 showed an amplitude dissolving power of 8,5-11%(amplitudnoye razresheniye). There is 1 figure.

ASSOCIATION: Institute for Crystallography AN USSR (Institut kristallografii. Akademii nauk SSSR).

AVAILABLE: Library of Congress.

1. Chemistry 2. Crystals-Growth

Card 3/3

sary to introduce an activator inth the set (up to 3%) which renders the growth, especially in the initial stage, very difficult. Therefore measures for the reduction of the activator-losses at the expense of evaporation are quite natural. For this purpose the authors constructed a hermetic furnace. In the cover of the furnace is an inspection glass, so that the process of the growth can be observed. The activator-losses were determined by means of radioactive thallium. It is shown that from an open crucible almost the entire activator evaporates within 12-15 hours, whereas in a hermetically closed furnace the activator concentration in the melt within 32 hours decreased by 20%. Under consideration of this fact the authors calculated a set with such an activator-addition that the nonuniform distribution of the activator does not disturb the spectrometric character of the crystal. The fact that the furnace was hermetically closed made a contact of the melt with atmospheric humidity impossible and thus a formation of bubbles in the melt was prevented. The latter are the cause of the formation of dull spots in the crystal. The reduction of the activator-losses permitted to obtain sodium iodide crystals of large dimensions. Of the grown crystals scintillators were produced and tested. Crystals with a diameter of 55 to 80 mm and a height of 35 to 45 mm in the case of an excitation of them by

Belyayev L M

AUTHORS: Belyayev, L. M., Panova, V. P., Perl'shteyn, V. A., Chadayeva, V. V., Tsigler, I. M. 48-1-4/20

TITLE: On the Growing of Spectrometric Crystals According to the Method Developed by Kyropoulos (O vyrashchivanii metodom Kiropulosa spektrometricheskikh kristallov).

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1958, Vol. 22, Nr 1, pp. 21-22 (USSR).

ABSTRACT: It is pointed out that in the growing according to the method developed by Kiropulos the activator evaporates during the growth at the expense of a higher tension of the activator-vapors and at the expense of a lower melting-temperature of the activator. In growing according to the method by Obreimov-Shubnikov a self-purification of the substance takes place during growth and the activator is displaced into the upper part of the crystal. Therefore, neither of this two methods offers any possibility of obtaining crystals with a uniform distribution of the activator - If, however, the concentration of the activator in the crystal is increased up to $4\text{-}5.10^{-4}$ Mol TlJ per NaJ-Mol, emission of light in the activator-concentration becomes practically imperceptible. In order to obtain such a concentration of the activator in the crystal by the growing of crystals according to the method developed by Kiropulos, it is neces-

Card 1/3

On the Question of the Electret State in Naphthalene

illumination. The charge density produced was about 10^{-10} coulomb/cm^2. A similar charge density could be produced by polarising in the dark. This shows that a sharp distinction cannot be drawn between the photoelectret and thermoelectret states in naphthalene and that both these phenomena are controlled by the same mechanism.
There are 5 references, 2 of which are Soviet, 2 English and 1 German.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography of the Ac.Sc.USSR)

SUBMITTED: June 28, 1958

SOV/70-3-6-23/25

AUTHORS: Belyayev, L.M., Belikova, G.S., Fridkin, V.M. and Zheludev, I.S.

TITLE: On the Question of the Electret State in Naphthalene (K voprosu ob elektretnom sostoyanii v naftaline)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 6, pp 762-763 (USSR)

ABSTRACT: Baldus (Z. Angew.Phys., 1954, Vol 6, p 481) reported observing the transformation of hetero-charging in a naphthalene electret into homo-charging. This result contradicts other work and experiments were carried out to clarify the situation. Liquid naphthalene was allowed to set in an electric field between two Al plates 5 mm apart. The field of 4kV/cm was applied for 90 minutes. The naphthalene plate was removed from the condenser and tested with a dynamic electrometer. Heterocharging was found. Discharging by illumination was then tried. Integration of the discharge current gave an initial charge of 10^{-8} coulomb/cm^2. Repeated illumination gave no further discharge current. Hence the heterocharging is conditioned by localised electrons. Plates cut from single crystals of naphthalene were then tried. They were subjected to a field of 3 kV/cm for 10 min with U/V

Card1/2

Investigation of the Distribution of an Activator in Alkali Halide Crystals by the Method of Radioactive Indicators. II.

scintillation of the crystal. The distribution of the anions of the activator follows the same law of distribution as the cations.
There are 3 figures and 3 Soviet references.

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography Ac.Sc.USSR)

SUBMITTED: January 14, 1958

SOV/70-3-4-21/26

AUTHORS: Belyayev, L.M., Perl'shteyn, V.A. and Panova, V.P.

TITLE: Investigation of the Distribution of an Activator in Alkali Halide Crystals by the Method of Radioactive Indicators. II. (Issledovaniye raspredeleniya aktivatora v shchelochno-galoidnykh kristallakh metodom radioaktivnykh indikatorov. II)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 4, pp 506-507 (USSR)

ABSTRACT: First part in Kristallografiya, 1957, Vol 2, Nr 3, p 437.

Radioactive $Tl^{204}I$ was added to alkali halide crystals during growth to enable the movement of the cation impurities to be followed. KI crystals to which TlCl, TlBr or TlI were added were studied to see the effects of the anions on the distribution of the impurity cations. Br^{82} and I^{131} were also used as indicators. It is concluded that anions of the activator influence only quantitatively the distribution of cations of the activator through the crystal (KI - Tl salt system) but do not influence the emission spectrum or the intensity of the

Card 1/2

70-3-2-26/26

AUTHORS: Belov, N.V., Belyayev, L.M., Bokiy, G.B., Bronnikova, Ye.G., Vaynshteyn, B.K., Zhdanov, G.S., Iveronova, V.I., Kitaygorodskiy, A.I. and Pinsker, Z.G.

TITLE: The Fourth International Congress of Crystallography (IV mezhdunarodnyy kongress kristallografov) (Montreal, July 10-19, 1957)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 2, pp 250 - 260 (USSR).

ABSTRACT: Outline of the scientific proceedings of the conference.

Card 1/1

USCOMM-DC-60577

48-4-28/48

TITLE: Dependence of Gamma- and Photoluminescence Yield of Alkali Iodides Activated by Tallium on the Concentration of the Activator (Zavisimost' vykhoda gamma- i fotolyuminestsentsii shchelochnykh iodidov, aktivirovannykh talliyem ot kontsentratsii aktivatora)

1.6×10^{-3} mol.Tl/mol.MeJ).

The relative yield due to excitation by gamma-rays rises with the increase of Tl concentration and approximates saturation at the further increase in concentration. The values of characteristic concentrations, at which the yield reaches half a value of the maximum yield, are as follows: 5.9×10^{-5} mol.Tl/mol. NaJ for NaJ-Tl; 24.4×10^{-5} mol.Tl/mol.KJ for KJ-Tl, and $< 3 \times 10^{-5}$ mol.Tl/mol.CsJ for CsJ-Tl.

No references are cited.

INSTITUTION: Not indicated

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 2/2

Belyayev, L. M.

SUBJECT: USSR/Luminescence 48-4-28/48

AUTHORS: Belyayev L. M., Galanin M.D., Morgenshtern Z.L. and Chizhikova Z.A.

TITLE: Dependence of Gamma- and Photoluminescence Yield of Alkali Iodides Activated by Tallium on the Concentration of the Activator (Zavisimost' vykhoda gamma- i fotolyuminestsentsii shchelochnykh iodidov, aktivirovannykh talliyem ot kontsentratsii aktivatora)

PERIODICAL: Izvestiya Akdademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #4, p 548 (USSR)

ABSTRACT: This investigation was aimed at clarification of the problem, what is the concentration of an activator, for which the energy transfer from the lattice to the activator proceeds with a sufficient effectiveness.

Investigations were carried out with single crystals of NaJ, KJ and CsJ activated by tallium, whose concentration was determined by the polarographic method. The measurements of relative yield due to excitation by light have shown that the yield does not depend on concentration, that is, no concentration quenching was observed within the limits investigated (up to

Card 1/2

BELYAYEV, L., kand. fiz.-mat. nauk; SOZANSKAYA, Ye.

Scintillation crystals. IUn. tekh. 2 no.9:26-29 S '57. (MLRA 10:9)

1. Nauchnyy sotrudnik Vsesoyuznogo Instituta razvedochnoy geofiziki (for Sozanskaya).

(Scintillation counters)

Investigation of the distribution of actuators in alkalihalide crystals by means of radio-active isotopes. (Cont.)

conditions, the distribution of the activator in the crystal was more uniform, as can be seen from the graph, Fig. 4, p.439. The addition of a radio-active isotope enabled elucidation of the influence of long duration annealing of crystals on the redistribution in them of the activator due to diffusion. The crystal of KI was heated to 600 C and held at that temperature for seven days and, following that, it was slowly cooled down; the concentration non-uniformities decreased but were not entirely eliminated.

There are 6 figures and 5 references, 3 of which are Slavic.

ASSOCIATION: Institute of Crystallography Ac.Sc. U.S.S.R. (Institut Kristallografii AN SSSR)

SUBMITTED: March 1, 1957.

AVAILABLE: Library of Congress

Card 3/3

Investigation of the distribution of actuators in alkalihalide crystals by means of radio-active isotopes. (Cont.)

β activity. The results of measurements have shown that the content of $Tl^{204}I$ decreases in accordance with an exponential relation which is expressed by equation:

$$K_{t_n} = K_{t_o} e^{-1.15(t_n - t_o)},$$

and graphically by the curve, Fig. 1, p.438. If a seeding is introduced and the crystal begins to grow, the evaporation surface decreases and accordingly, also, the loss of activator material. The change in the $Tl^{204}I$ concentration in the melt leads to a differing concentration in the crystal and this is graphically expressed by Fig. 2, p. 438. The distribution of the activator in the crystal grown by the Kyropoulos method is shown in the graph, Fig.3, and it can be seen from this graph that the activator is distributed in layers and, thus, layers which form later contain less activator material due to its evaporation from the melt. The lower concentration of the activator material in the centre of the crystal is attributed to self-purification of the substance which takes place during the lower speed of growth of the crystal. The effect of hermetic sealing has also been investigated and under such

BELYAYEV L.M.

70-3-19/20

AUTHOR: Belyayev, L.M., Perlshteyn, V.A. and Panova, V.P.

TITLE: Investigation of the distribution of actuators in alkali-halide crystals by means of radio-active isotopes. (Issledovanie raspredeleniya aktivatora v shchelochno-galoidnykh kristallakh metodom radioaktivnykh indikatorov)

PERIODICAL: "Kristallografiya" (Crystallography), 1957, Vol.2, No.3, pp. 437 - 440 (U.S.S.R.)

ABSTRACT: Investigations were carried out for potassium iodide, sodium iodide and caesium iodide crystals. Growth of crystals by the Kyropoulos method is effected in an open crucible into which the basic substance and the activator are poured simultaneously. Owing to the differences in the melting temperatures and in the vapour tension of the individual components, their volatility is non-uniform. In the given case, TlI has a lower melting temperature and a higher vapour tension and volatilises more intensively; consequently, there is a decrease in the TlI concentration in the melt with the progress of growth of the crystal and this can cause non-uniform distribution of the activator in the crystal. This factor was studied by using a melt of 99% KI and 1% $Tl^{204}I$, from which specimens were taken at equal intervals of time and in these the Tl concentration was determined from their relative

Card 1/3

BELYAYEV, L.M. and PERLSTEIN, V. A. and PANOVA, V. P.

I-Academichesky, Moscow

"Investigation of Activators Distribution in Alkali-Halogen Crystals by Radioactive Isotop Method" (Section 14-13)-a paper submitted at the General Assembly and International Congress of Crystallography, 10-19 Jul 57, Montreal, Canada.

C-3,800,189

an NaJ(T1) crystal and a photomultiplier ФЭУ-19 (FEU-19); the statistical error was ⩽ 3%. It was found that in an NaJ(T1) crystal grown by Kiropolous' method, the activator concentration may vary by up to 40% per cm; this inhomogeneity is largely due to evaporation of the activator from the melt. Concentration of T1 in the crystal is regularly connected with the T1 concentration in the melt. Above 4×10^{-4} moles T1/mole NaJ in the crystal the relative luminescence becomes less dependent on the T1 concentration, so that even distribution of activator is less important when this concentration is exceeded. Activator distribution was also uneven in crystals grown by the method of Obriemov and Shubnikov. T1 concentration was markedly affected by the rate of crystal growth. Concentration of the Ag activator in KJ crystals remained unchanged when the amount of Ag in the initial melt was increased by a factor of 2. Activator nonuniformity could be slightly smoothed out by diffusion when the crystals were heated for 7 days. There are 5 figures.

S/564/57/000/000/028/029
D258/D307

AUTHORS: Belyayev, L. M., Perl'shteyn, V. A., and Panova, V. P.

TITLE: Application of radioactive indicators to the study of the distribution of activator in alkali halide crystals

SOURCE: Rost kristallov; doklady na Pervom soveshchanii po rostu kristallov, 1956 g. Moscow, Izd-vo AN SSSR, 1957, 341-344

TEXT: Crystals of KJ, NaJ and CsJ were grown by the methods of Kiropolous and of Obriemov and Shubnikov to study the distribution of activators (TlJ and AgCl containing Tl^{204} and Ag^{110}) within the crystals. Radioactivity of Tl^{204} was determined with a standard "B" ("B") apparatus, using a B-2 Geiger-Muller counter, and that of Ag^{110} with a scintillation counter employing

Card 1/2

Methods of growing...

authors give an account of the modifications made by them to the apparatus of Kyropolous for growing crystals of alkali halides, and of a vacuum equipment used for calcium tungstate. The experimental assistance of Z. B. Perekalina, G. S. Belikova, V. V. Chadayeva, K. S. Chernyshev, M. V. Koshuashvili, V. A. Perl'shteyn, and I. N. Tsigler is acknowledged. There are 8 figures and 2 tables.

Card 2/2

S/564/57/000/000/017/029
D258/D307

AUTHORS: Belyayev, L. M., Bitovskiy, B. V., and Dobrzhanskiy, G. F.

TITLE: Methods of growing luminescent crystals for scintillation counters

SOURCE: Rost kristallov; doklady na Pervom soveshchanii po rostu kristallov, 1956 g. Moscow, Izd-vo AN SSSR, 1957, 249-261

TEXT: A brief survey of crystalline organic and inorganic scintillations is first given, presenting the data in tabular form. An apparatus is described and illustrated in which crystals of naphthalene, diphenylacetylene, dibenzyl, and other compounds may be grown, indicating the general procedure, and an apparatus for stilbene crystals is proposed. The difficulties of growing large anthracene crystals are discussed, and a description is given of a suitable apparatus. For inorganic scintillators, the

Card 1/2

Belyayev, L. M.

Category: USSR/Fitting Out of Laboratories. Instruments. Their Theory, H. Construction and Use.

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 31133

Author : Belyayev L. M., Narbutt K. I., Stolyarova Ye. L., Konstantinov I. Ye., Alekseyev V. A., Gil'varg A. B., Smirnova I. S.

Inst : Academy of Sciences USSR

Title : Experimental Use of Luminescent Counter for Registering X-Ray Spectra.

Orig Pub: Izv. AN SSSR, Ser. fiz., 1956, 20, No 7, 801-808.

Abstract: Use was made of a luminescent counter consisting of NaI(Tl) crystal and FEU-19 with necking-in, for registering primary and fluorescence x-ray spectra, and for the study of fine structure of x-ray spectra. The electrical hookup consists of a preamplifier, wide-band amplifier, scaler attachment (16:1), PS-64 and electromechanical counter. Use of the counter enhances sensitivity of x-ray spectrum analysis by one order and lowers the exposure by 4 times, in comparison with a gas counter.

Card : 1/1

USSR/Fitting Out of Laboratories - Instruments, Their Theory, Construction, and Use, H

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61963

Abstract: central chamber. Angle range of arm rotation and actuation of the tube swinging mechanism are effected by 2 stops with Hg-contacts. Shape of the eccentric of the swinging mechanism is selected in such a manner as to ensure attainment of uniform sensitivity scale on roentgenoscopy. Focussing is effected in RSD-2 by a quartz crystal ground on both sides to a 1,000 mm radius and set in optical contact with cylindrical surface of the glass segment of crystal-holder (radius 500 mm). Discussions of effective surface of reflecting curved crystal 10 x 50 mm. Recording of X-ray spectra is done on motion picture film sensitive to wave length region 2,000-5,000 XE. To facilitate reading of spectra a wave length scale is printed on the film.

Card 2/2

BELYAYEV, L. M.

USSR/Fitting Out of Laboratories - Instruments, Their Theory, Construction, and Use, H

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61963

Author: Harbutt, K. I., Vaynshteyn, E. Ye., Gil'varg, A. B., Belyayev, L. M.

Institution: None

Title: New Vacuum X-Ray Spectrograph RSD-2

Original Periodical: Izv. AN SSSR, ser. fiz., 1956, 20, No 2, 152-160

Abstract: X-ray spectrometer RSD-2 is designed for X-ray spectra investigations of K-series elements from K to Cu and L-series elements from Ag to Ta, and also for the study of minute structure of emission lines and boundary absorption. Spectrograph parts, high voltage equipment, vacuum assembly and measurement instruments are set up as a single unit. The dismountable, cooled X-ray tube is made as a separate component connected to the central chamber by a bellows and mounted on an arm that rotates around the vertical axis of the

Card 1/2

ILLEGIBLE

Category : USSR/Optics - Physical optics

K-5

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2363

of NaI-Tl, for sufficiently large values of ε, exceeds the summary glow of NaI-Tl, and this is explained by the considerably greater fraction of phosphorescence in the glow of KI-Tl.

Card : 2/2

BELYAYEV, L. M.

Category : USSR/Optics - Physical optics K-5

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2363

Author : Belyayev, L.M., Galanin, M.D., Morgenshtern, Z.L., Chizhikova, Z.A.
Inst : Phys. Inst. Acad. of Sciences USSR; Inst. of Crystallography Acad. of Sciences USSR
Title : Dependence of the Yield of Gamma and Photoluminescence of NaI-Tl Crystals on the Thallium Concentration.

Orig Pub : Dokl. AN SSSR, 1955, 105, No 1, 57-60

Abstract : The relative luminescence yields φ of NaF-Tl crystals excited by gamma rays from Co^{60} and photo-excited at 289 and 254 mμ were measured as functions of the concentration c of Tl, which was determined polarographically. It is shown that in the long-wave absorption band of Tl the index of light absorption is proportional to c, so that for low thallium concentration the value of c could be determined from the absorption. In the case of the 289 mμ excitation, i.e., in the first (long-wave) absorption band of Tl, φ is independent of c up to values of c amounting to 10^{-3}M. In the case of the 254 mμ excitation, φ increases up to $c \sim 2 \times 10^{-4}$M and becomes independent of c beyond that. An analogous dependence is observed also in gamma excitation. The half value of the limiting φ of gamma luminescence is attained at $c = 5.9 \times 10^{-5}$M. The scintillation brightness is greater in NaI-Tl than in Ki-Tl, but the summary glow

Card : 1/2

Category : USSR/Optics - Physical optics

K 5

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 2364

intrinsic lattice absorption, η increases rapidly up to concentrations of approximately 1.5×10^{-4} g of Tl per gram of KI, and becomes independent of the Tl concentration beyond that. This indicates a low effectiveness in the transfer of the absorbed energy from the basic substance to the Tl.

Card : 2/2

BELYAYEV, L.M.

Category : USSR/Optics - Physical optics K-5

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2364

Author : Belyayev, L.M., Galanin, M.D., Morgenshtern, Z.L., Chizhikova, Z.A.
Inst : Phys. Inst. Acad. of Sciences USSR; Inst. of Crystallography, Acad. of Sci. USSR
Title : Dependence of the Yield of Gamma and Photoluminescence of KI-Tl Crystals on the Thallium Concentration

Orig Pub : Dokl. AN SSSR, 1954, 99, No 5, 691-694

Abstract : The luminescence yield η was determined for KI-Tl phosphors with a concentration of Tl of 2.35×10^{-6} to 1.2×10^{-3} g/g in the finished crystal, for excitation with gamma rays from Co^{60} and for optical excitation. In the former case, the intensities of the individual scintillations and the summary average brightness of the glow were measured. In both cases, η first increases approximately linearly with increasing Tl concentration, and then more slowly, disclosing a tendency to saturation at approximately 10^{-3} g to Tl per gram of KI. A curve of similar form is observed in the case of optical excitation in the band of the intrinsic absorption of the KI lattice ($\lambda = 200$ mμ), thus evidencing a certain community of luminescence mechanism in both cases. In the case of excitation in the first (long-wave) absorption band of Tl ($\lambda = 287$ mμ), η is independent of the concentration of Tl, but in the cases of excitation in the 240-245 mμ region, where the Tl absorption is overlapped by the edge of the

Card : 1/2

CA BELYAYEV, L.M.

8

Crystal structure of ramsayite. N. V. Belov and L. M. Belyaev. *Doklady Akad. Nauk S.S.S.R.* 69, 805-8 (1949). Elementary cell dimensions, detd. from Weissenberg diagrams: $a_0 = 11.26$; $b_0 = 8.57$; $c_0 = 5.09$ A.; space group $V_h^{16} = Pnca$, with 4 mols. $Na_2Ti_2Si_2O_9$ in the unit cell; d. 3.38 to 3.43. There are 22 independent parameters, in the coordinates of the ions (given in % of the axial lengths): Ti(8): $x = 16.8$; $y = -15.1$; $z = 13.5$; Si(8): $x = 2.3$; $y = 15.3$; $z = 19$; Na(8): $x = 15.2$; $y = 4.5$; $z = 65$; $O_I(8)$: $x = 9$; $y = 17.7$; $z = 19$; $O_{II}(8)$: $x = 7$; $y = 0.8$; $z = 20$; $O_{III}(8)$: $x = 6.7$; $y = 23$; $z = 41$; $O_{IV}(8)$: $x = 23.2$; $y = -17.5$; $z = 45$; $O_V(4)$: $x = 25$, $y = 0$; $z = 2$. Distances Si - O = 1.56; 1.59; 1.62, 1.73 A.; Ti - O: 1.81 - 2.05 A.; Na - O = 2.22 - 2.53 A. The structure is characterized by $[SiO_3]_\infty$ chains similar to those in the pyroxenes, and in agreement with the acicular-prismatic habit of the synthetic mineral. Cleavage planes are (210) and (100), through the layers of the O^{2-} parcels. The smaller ionic radius of Ti^{4+} and Na^+ in comparison to Mg^{2+} and Ca^{2+} explains the hardness of ramsayite, higher than that of diopside. The character of the birefringence is neg., because of the stronger effects of the $[TiO_6]$ chains parallel to c than that of $(SiO_3)_\infty$ chains in pyroxenes. The structure is in the c_0 dimensions identical with that of brookite, and a_0 is accurately $= \frac{1}{2}$ of that of diopside. While in pyroxenes the O^{2-} layers are 4-fold, the ramsayite shows 6-fold layers of the same kind. Also in the directions b_0 and c_0 are 3 and 2 layers, but the packing is not cubic as in pyroxene; it has a plane of symmetry parallel to the layer. The coordination of Na^+ to O^{2-} is about octahedral (but with 1 additional O^{2-} in next neighborhood). Similar to that of Ca^{2+} in diopside which is octahedral, too (but with 2 addnl. O^{2-} neighboring). These octahedral chains are arranged with the $[TiO_6]$ chains in the same structural motive as Ca octahedral chains are in pyroxenes combined with $[MgO_6]$ chains. Although the at. ratio Si:O is in ramsayite apparently 1:4.5, in the structure it is strictly 1:3, because $\frac{1}{2}$ of the O^{2-} are not bound to Si^{4+}. The Patterson analysis confirmed the structure proposed, the packing in the O^{2-} layers is very characteristic in the sequence (ABCACB), while in diopside it is (ABCABC).

W. Eitel

BELYAYEV, L. M.

USSR/Physics - Crystallography Oct 49

"The Practical Significance of Works in Crystallography", L. M. Belyayev, Cand Phys Math Sci

"Vest Ak Nauk SSSR" No 10, pp 40-43

Claims that crystallography is no longer a mere "cabinet science (i.e., purely academic) in the USSR. Crystallography is pre-eminently important since most practical solids (e.g., metals) are crystals. Crystallography includes studies of pharmaceutical powders and abrasives used in drilling rocks, besides optics and piezoelectricity (Rochelle salt crystals) etc. Mentions an industry for making synthetic corundum.

221T94

BELYAYEV, L. M.

Belyayev, L. M. "Introducing the teaching of crystallography in universities," (In connection with an article by N. N. KACHALOV and N. A. TOROPOV, "Setting up crystallography courses in chemico-technological institutions of higher learning" in the journal Vestnik vyssh. shkoly, 1948, No. 8), Vestnik vyssh. shkoly, 1948, No. 12, p. 30-31.

SO: U-3264, 10 April 1953, (Letopis 'Zhurnal 'nykh Statey, no. 3, 1949)

BELYAYEV, L. M.

PA 69T94

USSR/Physics
Crystallography
Structure Analysis

Mar/Apr 1948

"Review of 'Structure of Ionic Crystals and Metallic Phases' by N. V. Belov," L. M. Belyayev, 2 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XII, No 2

Work is examined, chapter by chapter. After describing basic laws of crystalline structure, author shows how they must be modified for certain elements because of peculiarities of their electronic structure. This class includes such important systems as carbides of iron and chromium. Among other subjects discusses phenomena of twinning and pseudosymmetry. Book contains 174 drawings.

69T94

BELYAYEV, Leonid Mikhaylovich; GORSKIY, L.A., inzh., retsenzent; PASHKOV, N.Ye., inzh., retsenzent; OSMINKIN, Ya.M., inzh., nauchn. red.; PENOVA, Ye.M., red.; KRYAKOVA, D.M., tekhn.red.

[Safety measures in knotting and splicing operations in shipbuilding] Tekhnika bezoapsnosti pri takelazhnykh rabotakh v sudostroenii. Leningrad, Sudpromgiz, 1963. 61 p.
(MIRA 16:12)
(Shipbuilding--Rigging) (Knots and splices)

L 44373-66
ACC NR: AP6030458

the end of 1964, the estimated Sr^{90} and Cs^{137} contents of the Black Sea were 2.7×10^{4} and 5.4×10^{4} cu, respectively. Orig. art. has: 5 tables and 1 figure. [LB]

SUB CODE: 08,18/ SUBM DATE: 28May65/ ORIG REF: 014/ ATD PRESS: 5077

Card 2/2 hs

L 44373-66 EWT(m)
ACC NR: AP6030458 (N) SOURCE CODE: UR/0213/66/006/004/0641/0644

AUTHOR: Belyayev, L. I.; Gedeonov, L. I.; Yakovleva, G. V.

34 B

ORG: none

TITLE: Estimation of strontium-90 and cesium-137 content in the Black Sea

SOURCE: Okeanologiya, v. 6, no. 4, 1966, 641-644

TOPIC TAGS: nuclear radiation, strontium 90, cesium 137, ocean radioactivity, ocean property, radioactive fallout

ABSTRACT: Based on studies of radioactive fallout over the Black Sea during the period 1959—1964, an attempt is made to estimate the Sr^{90} and Cs^{137} content of the Black Sea. In calculating the content it is assumed that the fallout density over the Black Sea is proportional to the rainfall. In determining the radioactive content, radiation carried to the Black Sea by its tributaries, isotope decay, and water exchange between the Black, Azov, and Marmora Seas is taken into account. Tables are presented which show the total fission-product fallout over the Black Sea for 1960 to 1964, the water balance of the Black Sea, Sr^{90} influx into the Black Sea, Sr^{90} efflux into the Seas of Marmora and Azov, and the Sr^{90} balance in the Black Sea. Since there is no available data on Cs^{137} concentration in the Black Sea tributaries, this estimate was made assuming that the activity ratio of Sr^{90} to Cs^{137} is 2 to 1. By

Card 1/2 UDC: 551.465.4(26.03)

BELYAYEV, L.I.; GEDEONOV, L.I.; GRITCHENKO, Z.G.; MAKSIMOVA, A.M.; SHVEDOV, V.P.; YAKOVLEVA, G.V.

Radioactive fallout in the Crimea in 1960-1961 Atom. energ. 15 no.3:264-265 S '63. (MIRA 16:10)

(Crimea--Radioactive fallout)

BELYAYEV, L.I.; GEDEONOV, L.I.; SHVEDOV, V.P.; YUZEFOVICH, A.A.

[Intensive radioactive fallout in Simeiz (Crimea) as a result of the nuclear explosion of Feb. 13, 1960 in the Sahara] Intensivnoe radioaktivnoe vypadenie v Simeize (Krym) v rezul'tate iadernogo vzryva v Sakhare 13 fevralia 1960 g. Moskva, Gos. Kom-t Soveta Ministrov SSSR po ispol'zovaniiu atomnoi energii, 1961. 36 p. (MIRA 15:1)

(Simeiz—Radioactive fallout)

BELYAYEV, L.I.

Method of calculating fractional distribution of particles in a marine aerosol stream. Trudy MGI 19:42-56 '60. (MIRA 14:7)
(Meteorology, Maritime) (Aerosols)

BELYAYEV, L.I.

Molecular escape of salts from sea water through sublimation.
Trudy MGI 16:112-126 '59. (MIRA 13:5)
(Sea water--Composition) (Salts)
(Sublimation (Physical sciences))

BELYAYEV, L. I.

Sublimation of sodium chloride of marine origin. Trudy MGI 15:117-135 '59. (MIRA 12:6)
(Salt) (Sea water) (Sublimation (Physical sciences)

BELYAYEV, L.I.

Molecular migration of sodium chloride from sea water. Trudy MGI 15:106-116 '59. (MIRA 12:6)
(Salt) (Sea water) (Evaporation)

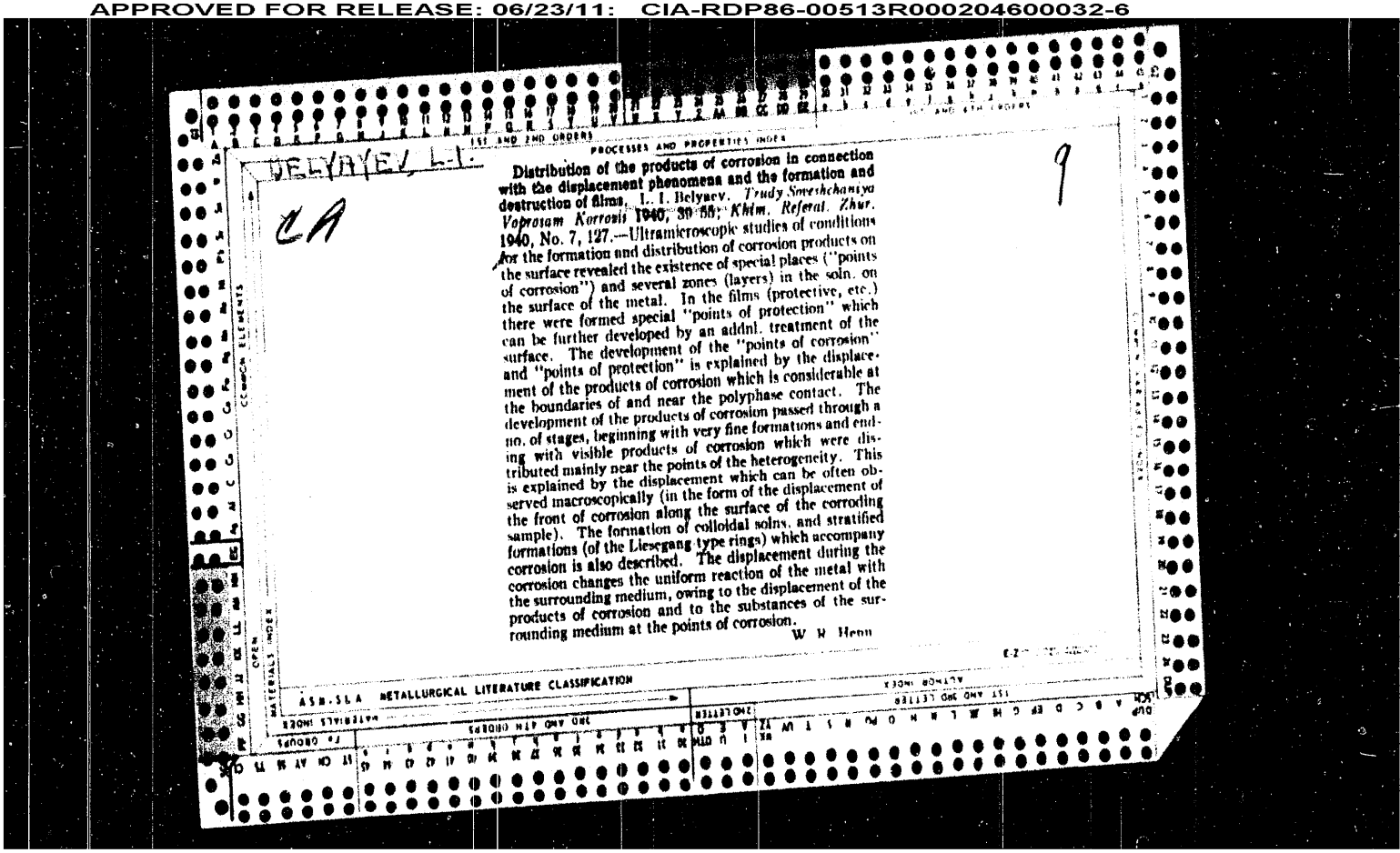
BELYAYEV, L.I.

Deposition of sea salts in flat plates from air flow at slow speeds.
Trudy MGI 10:119-132 '57. (MIRA 11:3)
(Sea air) (Salt crystals)

CA BELYAYEV, L.I.

Journal of Physical Chemistry - E

Determination of sea salt suspended in the air. L. I. Belyaev. *Doklady Akad. Nauk S.S.S.R.* 81, 1039-41 (1951).—Screens are preferable to filters for measuring the concn. of salt in the air. In future expts. B plans to investigate the distribution of the drops of atomized sea water according to their sizes. Gladys S. Macy



BELYAYEV, L. I.

CA

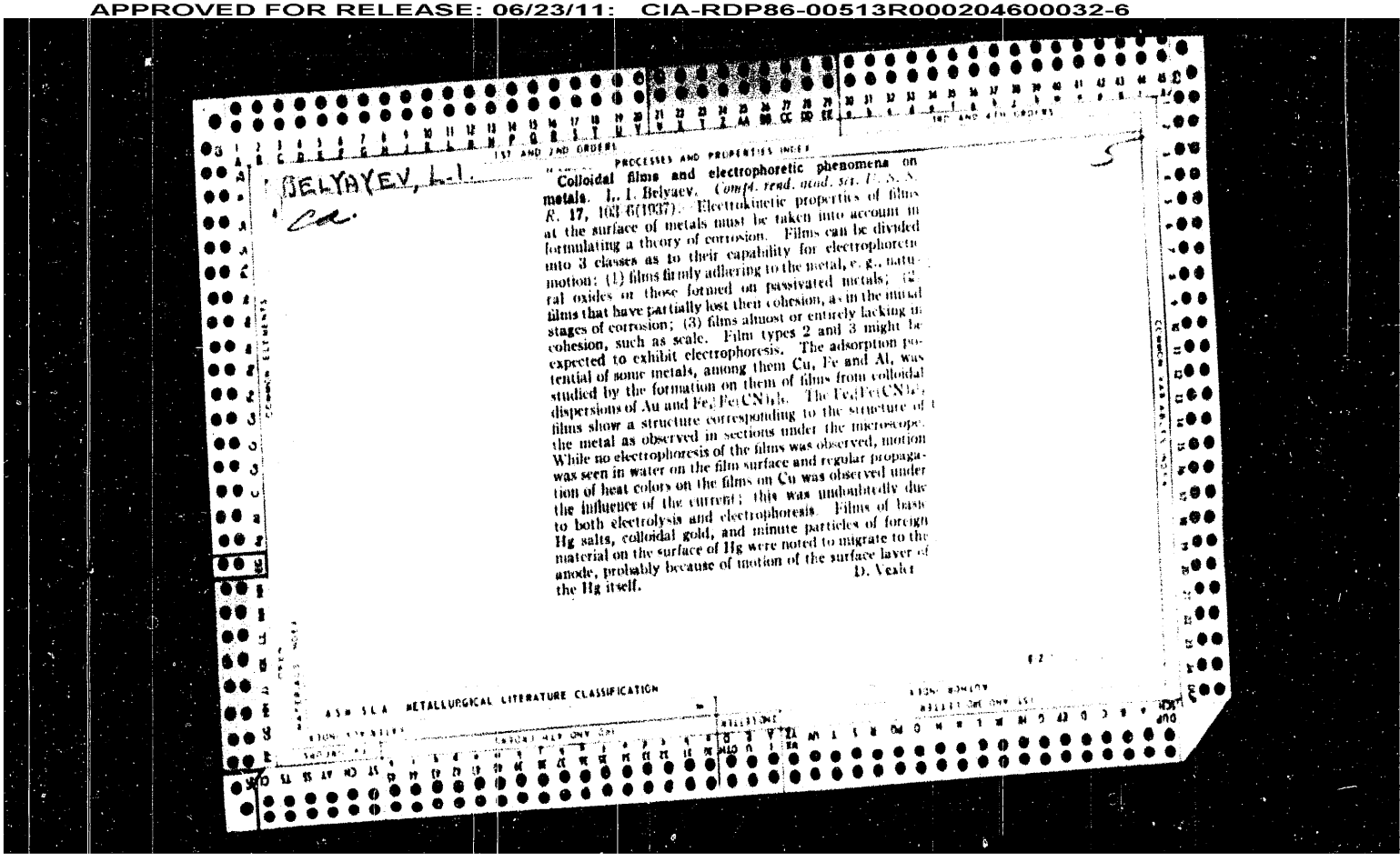
9

PROCESSES AND PROPERTIES INDEX

Distribution of the products of corrosion in connection with the displacement phenomena and the formation and destruction of films. L. I. Belyaev. *Trudy Soveshchaniya Voprosam Korrozii* 1940, 30-55; *Khim. Referat. Zhur.* 1940, No. 7, 127.—Ultramicroscopic studies of conditions for the formation and distribution of corrosion products on the surface revealed the existence of special places ("points of corrosion") and several zones (layers) in the soln. on the surface of the metal. In the films (protective, etc.) there were formed special "points of protection" which can be further developed by an addnl. treatment of the surface. The development of the "points of corrosion" and "points of protection" is explained by the displacement of the products of corrosion which is considerable at the boundaries of and near the polyphase contact. The development of the products of corrosion passed through a no. of stages, beginning with very fine formations and ending with visible products of corrosion which were distributed mainly near the points of the heterogeneity. This is explained by the displacement which can be often observed macroscopically (in the form of the displacement of the front of corrosion along the surface of the corroding sample). The formation of colloidal solns. and stratified formations (of the Liesegang type rings) which accompany corrosion is also described. The displacement during the corrosion changes the uniform reaction of the metal with the surrounding medium, owing to the displacement of the products of corrosion and to the substances of the surrounding medium at the points of corrosion.

W. W. Heus

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

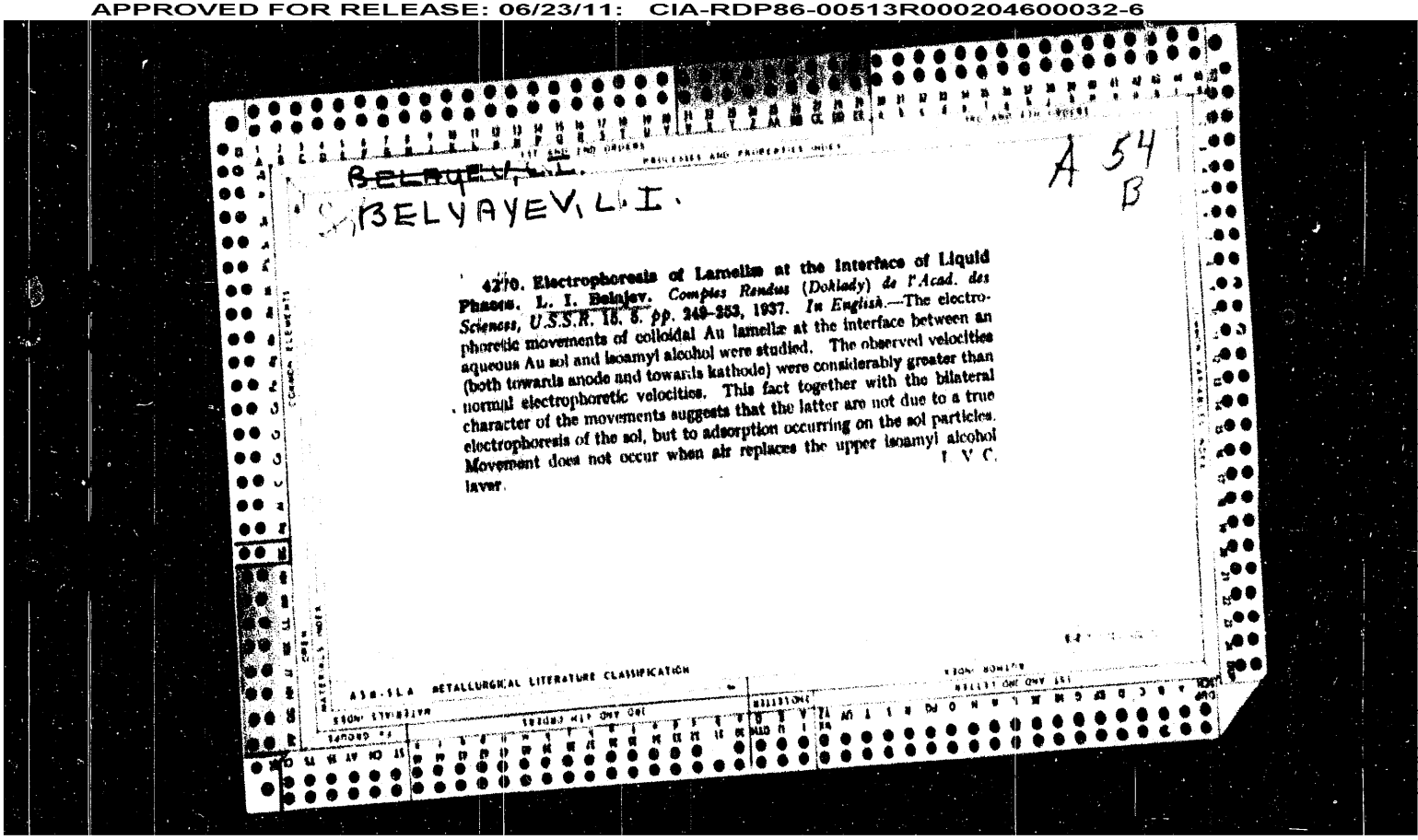
BELYAYEV, L.I.

ca.

Colloidal films and electrophoretic phenomena on metals. L. I. Belyaev. *Compt. rend. acad. sci. U. S. S. R.* **17**, 103-6(1937). Electrokinetic properties of films at the surface of metals must be taken into account in formulating a theory of corrosion. Films can be divided into 3 classes as to their capability for electrophoretic motion: (1) films firmly adhering to the metal, e. g., natural oxides or those formed on passivated metals; (2) films that have partially lost their cohesion, as in the initial stages of corrosion; (3) films almost or entirely lacking in cohesion, such as scale. Film types 2 and 3 might be expected to exhibit electrophoresis. The adsorption potential of some metals, among them Cu, Fe and Al, was studied by the formation on them of films from colloidal dispersions of Au and $Fe_4[Fe(CN)_6]_3$. The $Fe_4[Fe(CN)_6]_3$ films show a structure corresponding to the structure of the metal as observed in sections under the microscope. While no electrophoresis of the films was observed, motion was seen in water on the film surface and regular propagation of heat colors on the films on Cu was observed under the influence of the current; this was undoubtedly due to both electrolysis and electrophoresis. Films of basic Hg salts, colloidal gold, and minute particles of foreign material on the surface of Hg were noted to migrate to the anode, probably because of motion of the surface layer of the Hg itself.

D. Veaker

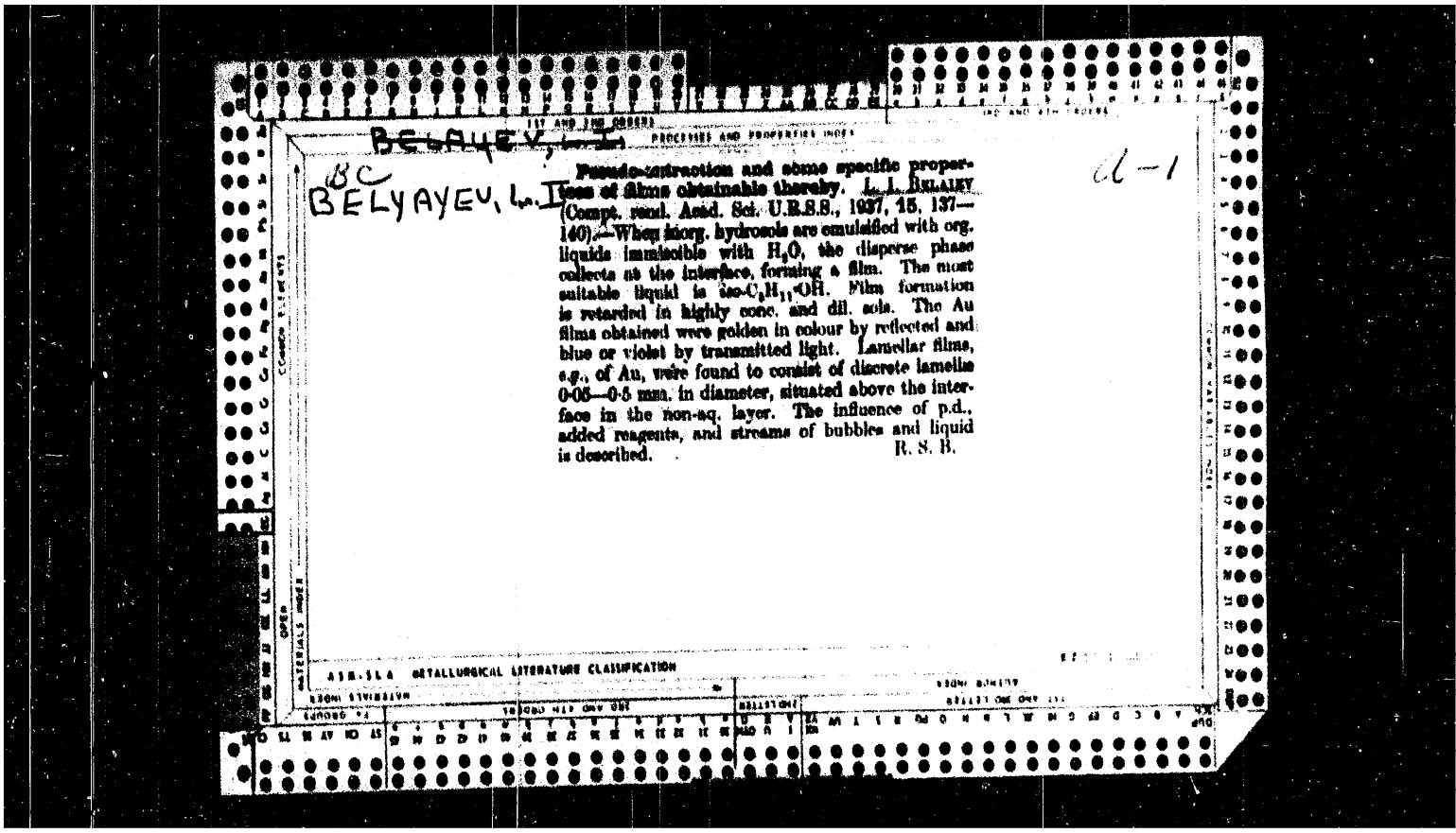
ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



BELYAYEV, L. I.

A 54
B

4270. **Electrophoresis of Lamellæ at the Interface of Liquid Phases.** L. I. Belajev. *Comptes Rendus* (*Doklady*) *de l'Acad. des Sciences, U.S.S.R.* 15. 5. pp. 249–253, 1937. *In English.*—The electrophoretic movements of colloidal Au lamellæ at the interface between an aqueous Au sol and isoamyl alcohol were studied. The observed velocities (both towards anode and towards kathode) were considerably greater than normal electrophoretic velocities. This fact together with the bilateral character of the movements suggests that the latter are not due to a true electrophoresis of the sol, but to adsorption occurring on the sol particles. Movement does not occur when air replaces the upper isoamyl alcohol layer. I. V. C.



BELYAYEV, L.I.

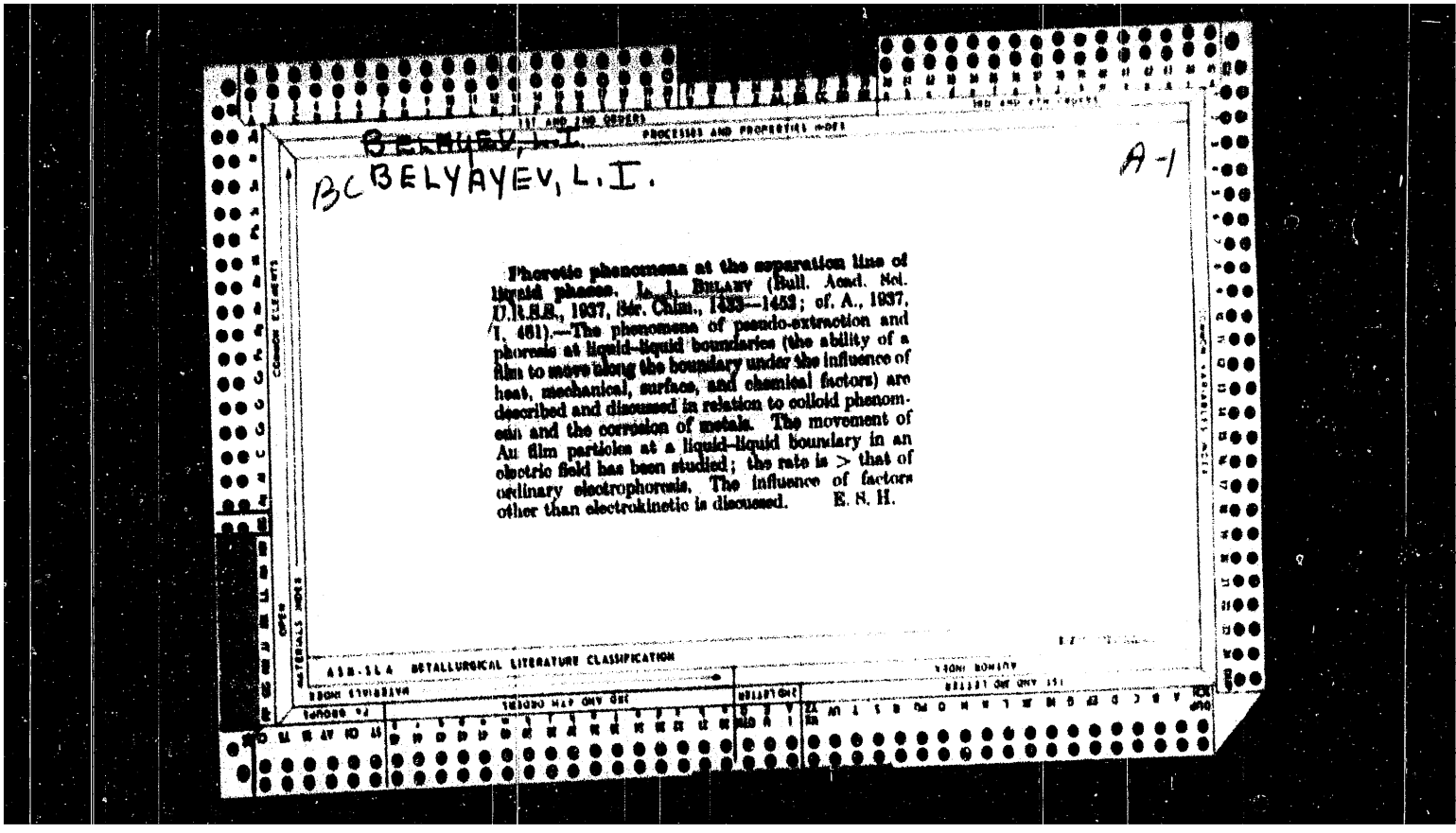
BC

BELYAYEV, L.I.

d-1

Pseudo-extraction and some specific properties of films obtainable thereby. L. I. BELYAEV (Compt. rend. Acad. Sci. U.R.S.S., 1937, 15, 137—140).—When inorg. hydrosols are emulsified with org. liquids immiscible with H_2O, the disperse phase collects at the interface, forming a film. The most suitable liquid is iso-$C_5H_{11}OH$. Film formation is retarded in highly conc. and dil. acids. The Au films obtained were golden in colour by reflected and blue or violet by transmitted light. Lamellar films, e.g., of Au, were found to consist of discrete lamellæ 0·05—0·5 mm. in diameter, situated above the interface in the non-aq. layer. The influence of p.d., added reagents, and streams of bubbles and liquid is described. R. S. B.

A38-51A METALLURGICAL LITERATURE CLASSIFICATION



BELYAYEV, L.I.

BC BELYAYEV, L.I.

A-1

Phoretic phenomena at the separation line of liquid phases. L. I. BELYAEV (Bull. Acad. Sci. U.R.S.S., 1937, Sér. Chim., 1433—1452; cf. A., 1937, I, 481).—The phenomena of pseudo-extraction and phoresis at liquid–liquid boundaries (the ability of a film to move along the boundary under the influence of heat, mechanical, surface, and chemical factors) are described and discussed in relation to colloid phenomena and the corrosion of metals. The movement of Au film particles at a liquid–liquid boundary in an electric field has been studied; the rate is > that of ordinary electrophoresis. The influence of factors other than electrokinetic is discussed. E. S. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ILLEGIBLE

GURENEV, M.N., kand. sel'skokhozyaystvennykh nauk; BELYAYEV, L.I., aspirant

Cultivation of light soils. Zemledelie 27 no.8:43-44 Ag '65.
(MIRA 18:11)

1. Permskiy sel'skokhozyaystvennyy institut.

GUTIKOV, Vladimir Semenovich; SIPAYLOV, Yuriy Aleksandrovich; BELYAYEV, L.G., red.; GOLUBLIN, K.S., red.

[Giving first aid to victims of nuclear weapons. What everybody should know and be able to do!] Okazanie pervoi meditsinskoi pomoshchi postradavshim ot iadernogo oruzhiia. Znat' i umet' kazhdomu! Moskva, DOSAAF, 1964. 46 p. (MIRA 18:2)

MEL'NIKOV, G.B.; BELYAYEV, L.D.

Reproduction of fish stock in the middle course of the Dnieper River after its regulation. Vop. ekol. 5:131-133 '62. (MIRA 16:6)

1. Nauchno-issledovatel'skiy institut gidrobiologii Dnepropetrovskogo universiteta.
(Dnieper River--Fishes)

BELYAYEV, L.D., nauchnyy sotrudnik

Fish fauna of the lower course of tributaries feeding the middle reaches of the Dnieper River. Vest. Dnep. nauch.-issl. inst. gidrobiol. 12:209-226 '60. (MIRA 14:12)
(Dnieper Valley--Fishes)

FEDIY, S.P., kand.biologicheskikh nauk; BELYAYEV, L.D., nauchnyy sotrudnik

Fish fauna of the Vorskla River. Vest. Dnep. nauch.-issl. inst. gidrobiol. 12:227-240 '60. (MIRA 14:12)
(Vorskla River--Fishes)

BELYAYEV, L. D.

MEL'NIKOV, G.B.; BELYAYEV, L.D.

Materials on the biology of fishes and fishing in the middle Dnieper in connection with hydraulic construction work. Trudy probl. i tem. sov. no.7:188-194 '57. (MLRA 10:4)
(Dnieper River--Fishes)

FRDIY, S.P.; BELYAYEV, L.D.;

Using fine-meshed nets for catching fish of little or no commercial value for removal from reservoirs. Vop.ikht. no.5: 163-169 '55. (MLRA 9:5)

1. Institut gidrobiologii Dnepropetrovskogo universiteta imeni 300-letiya vosoyedineniya Ukrainy s Rossiyey.
(Fishing)

L 8166-66

ACC NR: AP5025710

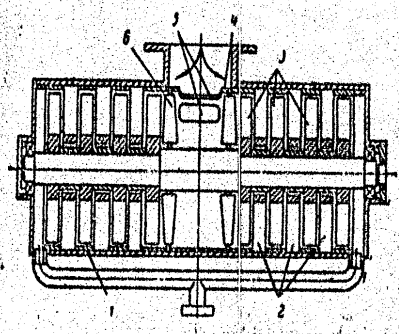


Fig. 1. 1- body; 2- stationary disks; 3- rotary disks; 4- insert; 5- passage windows; 6- guide vanes

Orig. art. has: 1 figure.

SUB CODE: ME/ SUBM DATE: 17Sep64

jw

Card 2/2

L 8166-66 EPF(n)-2/EWT(1)/T-2/ETC(m) WW/DJ

ACC NR: AP5025710 SOURCE CODE: UR/0286/65/000/018/0063/0063

AUTHOR: Belyayev, L. A.

ORG: none

TITLE: Two-flow turbo-molecular vacuum pump. Class 27, No. 174752 [announced by Central Construction Bureau for Vacuum Technology (Tsentral'noye konstruktorskoye byuro vakuumnoy tekhniki)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 63

TOPIC TAGS: pump, vacuum pump

ABSTRACT: This Author Certificate presents a two-flow turbo-molecular vacuum pump consisting of a body with stator and rotor disk packets distributed in it (see Fig. 1). To increase the pumping speed, a stationary fixture with passage windows and guide vanes is attached to the body at the entrance to the rotating disks.

Card 1/2 UDC: 621.524.1:621.527.8

L 6409-66

ACC NR: AP5026770

crease the clearance between the rotor disk and the housing, the latter can be provided with spiral-shaped channels directed from the center to the periphery; 2) to evacuate with two radial streams, double stationary and working blades can be used; 3) to increase pumping efficiency, two or more rotors operating opposite one another can be provided. Orig. art. has: 1 figure. [KT]

SUB CODE: 13 / SUBM DATE: 24Apr64/ ATD PRESS: 4189

Card 2/2

L 6409-66 EWT(1)/EPA(s)-2/EPF(n)-2/T-2/ETC(m) WW
ACC NR: AP5026770 SOURCE CODE: UR/0286/65/000/017/0053/0053

INVENTOR: Tuzankin, Yu. M.; Belyayev, L. A.

ORG: none

TITLE: Molecular vacuum pump. Class 27, No. 174314

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 53

TOPIC TAGS: vacuum, vacuum ejector pump, vacuum pump, vacuum technology

ABSTRACT: An Author Certificate has been issued for a molecular vacuum pump incorporating a rotor. To create a radial stream of evacuated gas for increasing the evacuation speed, stationary vanes are mounted in the housing along a concentric periphery parallel to the pivotal axis of the rotor, and interspersed with the rotor's working blades (see Fig. 1). The following variants are given: 1) to de-

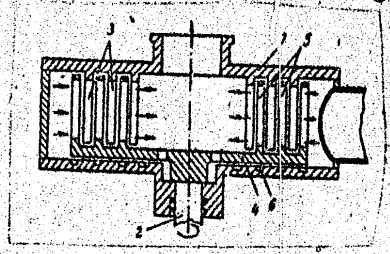


Fig. 1. Molecular vacuum pump

1 - Housing; 2 - pivotal axis of rotor; 3 - stationary vanes; 4 - rotor disk; 5 - working blades; 6 - spiral channels.

UDC: 621.521
621.527.8
621.524.1

Card 1/2

0901 1729

ACC NR: AP6021802 SOURCE CODE: UR/0413/66/000/012/0070/0070

INVENTOR: Belyayev, L. A.

ORG: None

TITLE: Working blade for turbomolecular vacuum pumps. Class 27, No. 182842 [announced by the Central Design Office of Vacuum Technology (Tsentral'noye konstruktorskoye byuro vakuumnoy tekhniki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 12, 1966, 70

TOPIC TAGS: vacuum pump, turbine blade

ABSTRACT: This Author's Certificate introduces a working blade for turbomolecular vacuum pumps. The blade is fastened to a disc and twisted uniformly with respect to length. The blade is designed for producing constant compression with respect to its length. The angles between the coaxial cross sections of the blade and the plane of the disc decrease uniformly and continuously from the tip to the root depending on the peripheral rotational velocity in each cross section.

UDC: 621.527.8-226.2

Card 1/2

NOVIKOVA, O.M.; SATTAROV, I.S.; BELYAYEV, L.A.

Epidemiological and clinical characteristics of pertussis-like diseases caused by Bordetella parapertussis. Zhur.mikrobiol., epid. i immun. 42 no.4:126-131 Ap '65. (MIRA 18:5)

1. Ministerstvo zdravookhraneniya SSSR i Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

ZAKHARASHEVICH, A.A., inzh., red.; BELYAYEV, L., inzh., red.;
KLIMOVA, G.D., red.izd-va; MOCHALINA, Z.S., tekhn.red.

[Construction specifications and regulations] Stroitel'-
nye normy i pravila. Moskva, Gosstroiizdat. Pt.3. Sec.G.
ch.10.1. [Hoisting and transport equipment; regulations
for manufacture and acceptance of assembly work] Pod"-
emno-transportnoe oborudovanie; pravila proizvodstva i
priemki montazhnykh rabot (SNiP III-G. 10.1-62) 1963. 30 p.
(MIRA 16:9)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po
delam stroitel'stva. 2. Gosudarstvennyy komitet Soveta Mi-
nistrov SSSR po delam stroitel'stva (for Zakharashevich).
3. Leningradskoye proyektno-konstruktorskoye otdeleniye
Glavnogo upravleniya po montazhu tekhnologicheskogo obору-
dovaniya i proizvodstvu montazhnykh rabot Ministerstva
stroitel'stva RSFSR (for Belyayev).
(Hoisting machinery) (Conveying machinery)

BELYAYEV, K.T.; BELYAYEVA, M.M., agronom

Crop rotation which includes row crops is the basis for high spring wheat yields. Zemledelie 24 no.2:16-22 F '62.
(MIRA 15:3)

1. Zaveduyushchiy Krasnoshchekovskim sortoispytatel'nym uchastkom, Altayskiy kray (for Belyayev).
(Wheat) (Rotation of crops)

BELYAYEV, Konstantin Ivanovich; KURBATOVA, G., red.; DANILINA, A., tekhn.red.

[How man perceives and transforms the world] Kak chelovek poznaet i preobrazuet mir. Moskva, Gos.izd-vo polit.lit-ry, 1959. 94 p. (MIRA 12:8)

(Knowledge, Theory of)

ARTEMOV, Vladimir Alekseyevich, prof.; BELYAYEV, K.I., otv. red.; PROKOPENKO, M.I., red.; CHERNYSHENKO, Ya.T., tekhred.

[Course of lectures on psychology] Kurs lektsii po psikhologii. Izd. 2., dop. i perer. Khar'kov, Izd-vo Khar'kovskogo gos. univ., 1958. 420 p. (MIRA 12:2)

1. Zaveduyushchiy kafedroy psikhologii, nauchnyy rukovoditel' Laboratorii eksperimental'noy fonetiki i psikhologii rechi 1-go Moskovskogo gosudarstvennogo instituta inostrannykh yazykov Ministerstva vysshego obrazovaniya SSSR (for Artemov).
(Psychology)